



# CALM, Cool, Collected: Creating a SharePoint GIS at LAX

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Donald Chinery, GISP, Creelman & Associates





## LAX Airport

- Gateway to LA: 63 million passengers per year





## Coming Soon: LAX 2.0



- \$4.1 Billion of Construction Improvements
- Nation's largest modernization airport project
- Largest public works project in Los Angeles' history
- LA NeXt Campaign ([la-next.com](http://la-next.com))



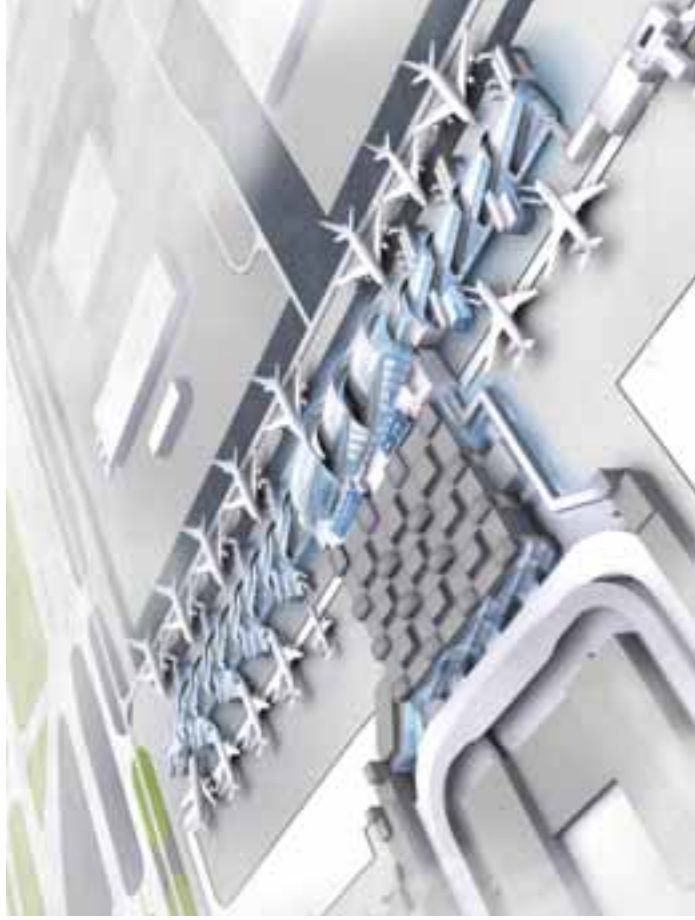


# Terminal 6 (Spring 2012)





## TBIT – Bradley West (2013)







## TBIT – Bradley West (2013)





# New "Front Door" (2013)







## Central Utility Plant (2014)







## CALM Team

# Coordination And Logistics Management

Our Mission:

*Minimize construction-related impacts to  
passenger service and tenants.*



## CALM Team Deliverables

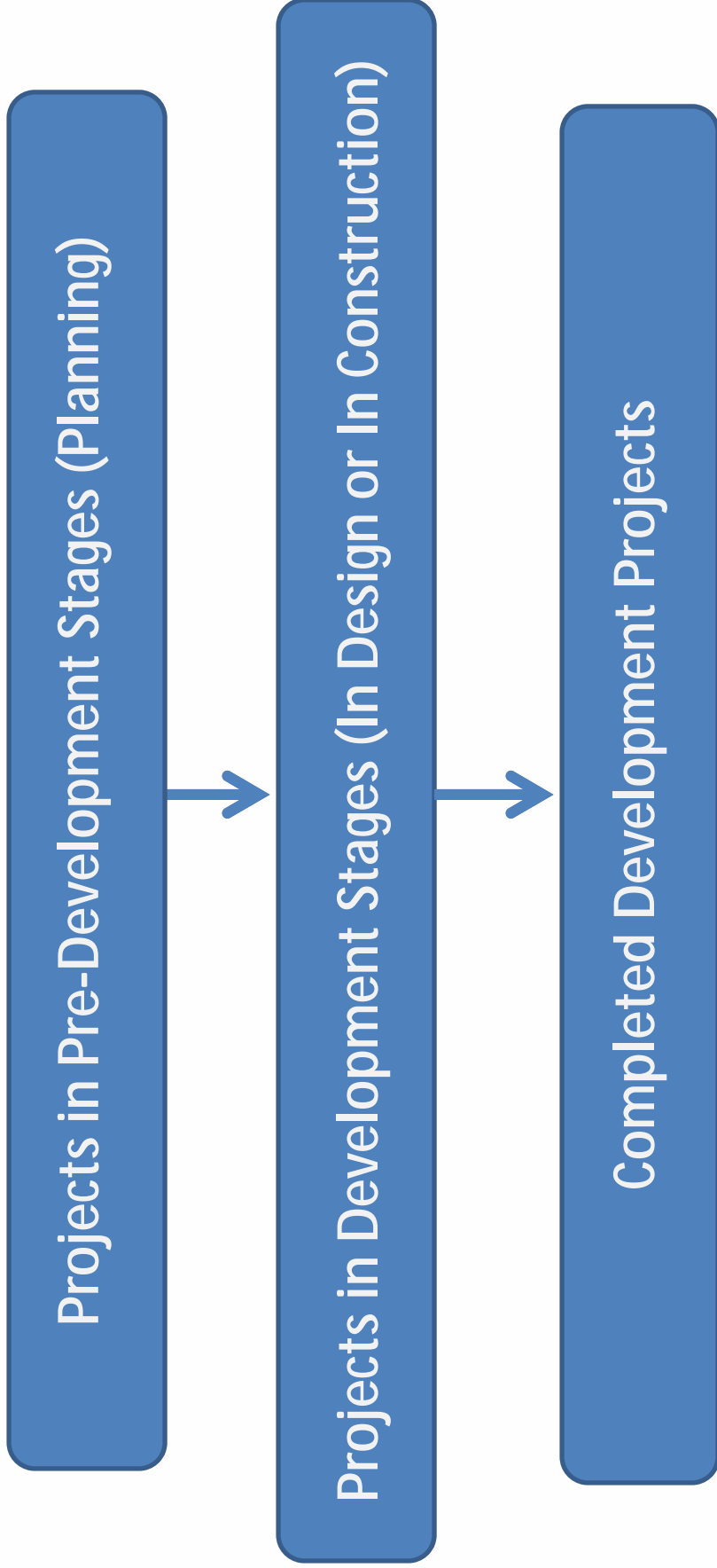
- Master Schedule (Monthly)
- Construction Bulletin (Weekly)

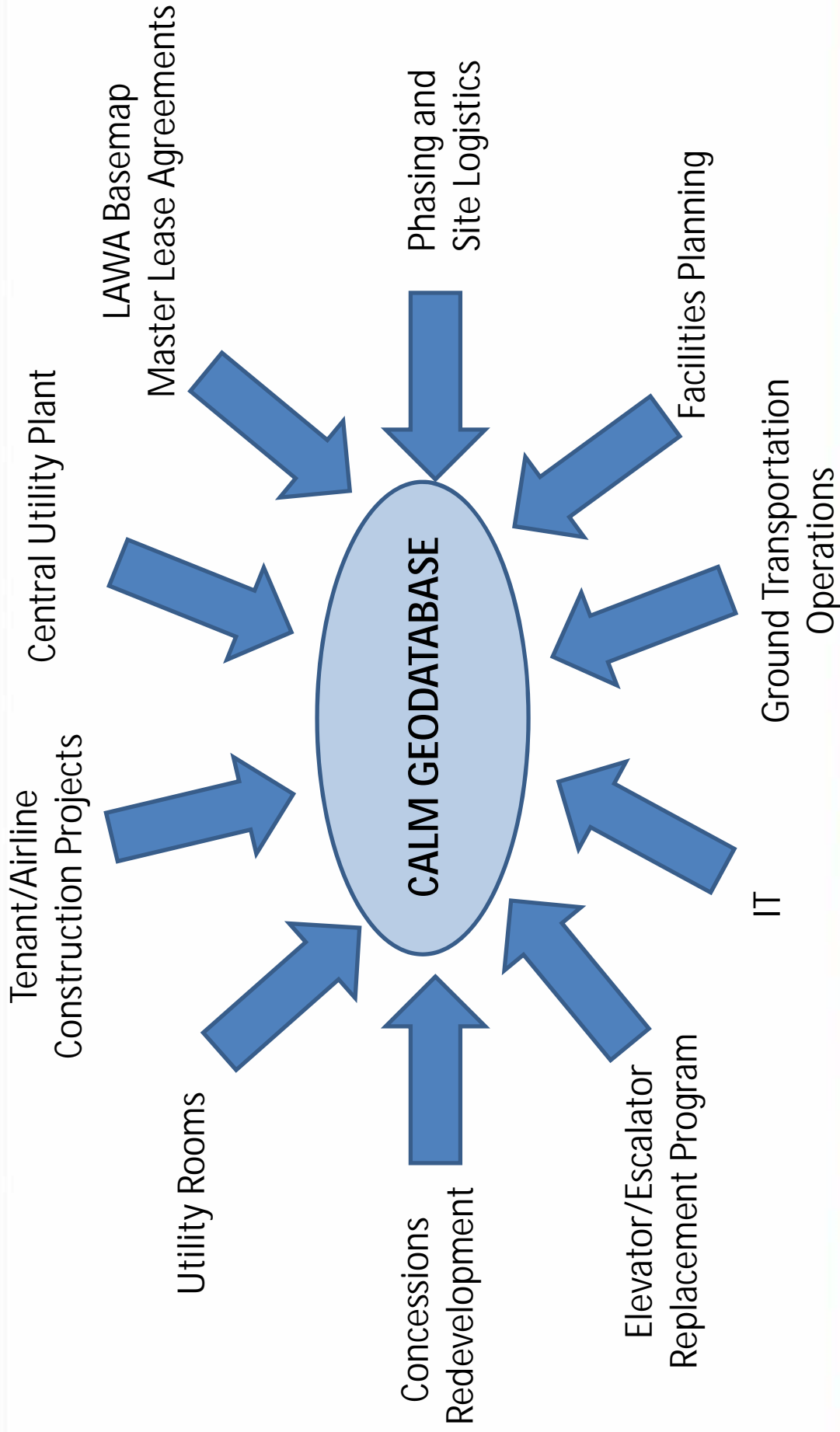
- *GIS Database ("Live") – CALM Geodatabase*  
– *Accessed through SharePoint*





# CALM Data Management

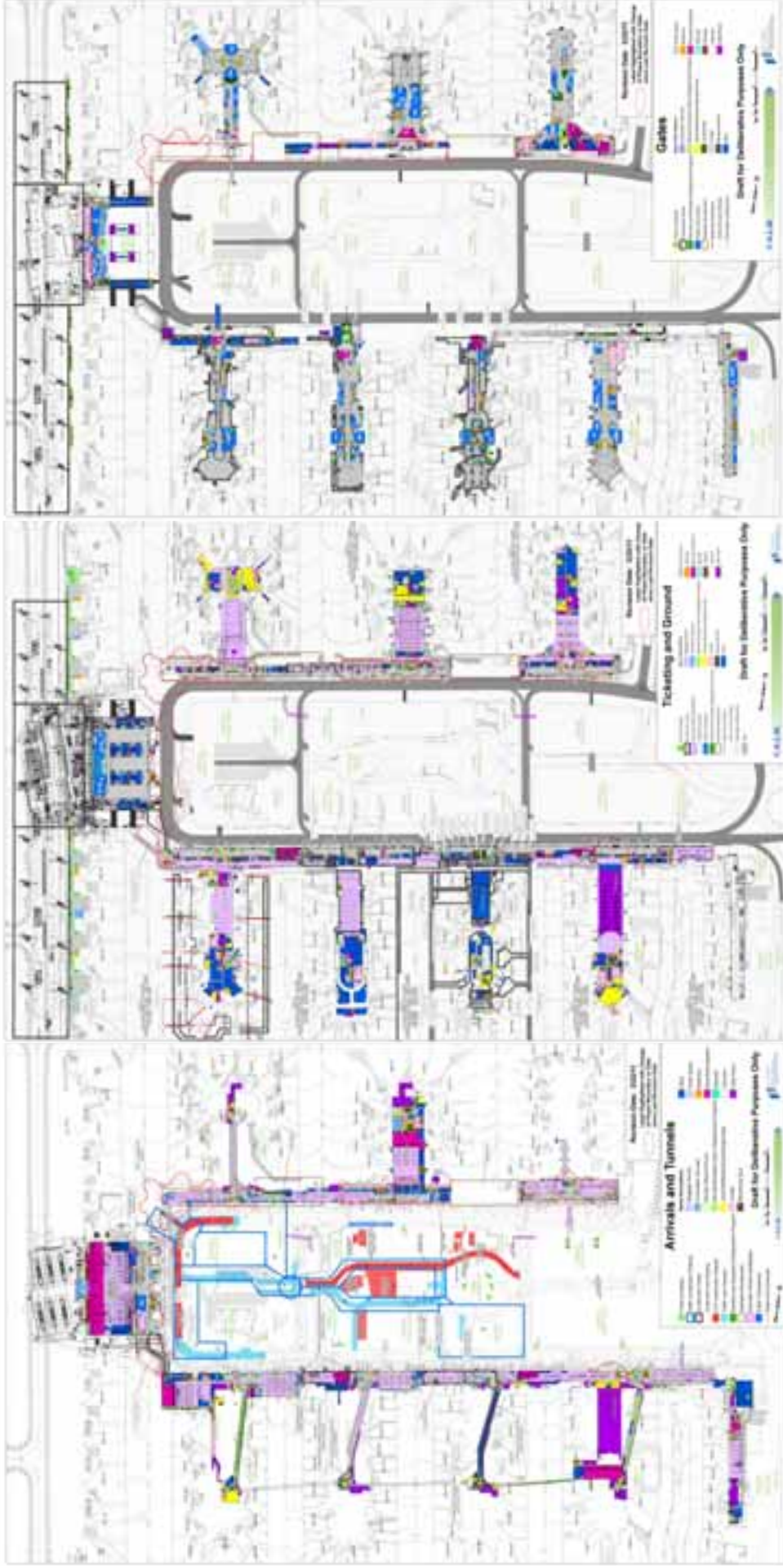








# CALM Central Terminal Area Maps





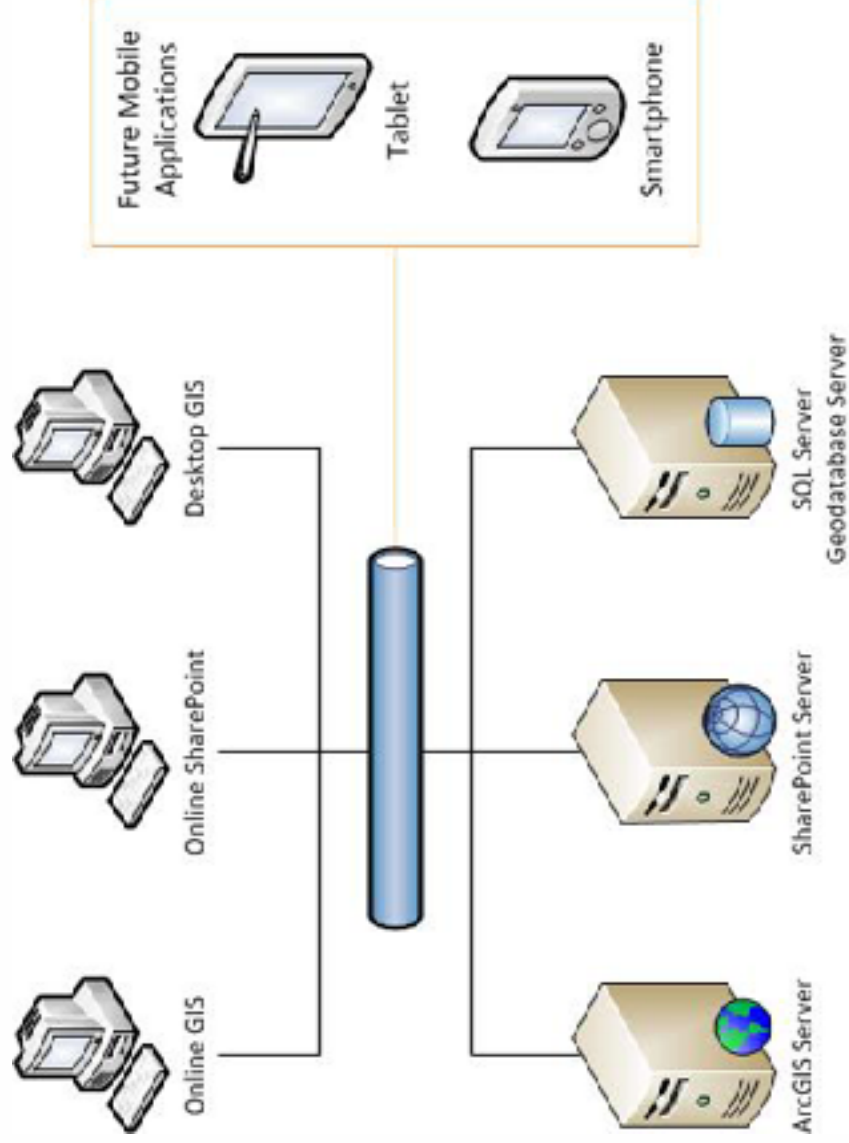
## CALM SharePoint GIS Setup

- Small Budget/Few Personnel
- Quick Turn-around – construction ongoing
- No time for “Needs Assessment”
- Access for LAWA employees only - through LAWA Share
  - Reason: sensitive location and cost information





# CALM SharePoint GIS Server Setup



- *ArcGIS Server 10*
- *SharePoint 2010*



## CALM SharePoint GIS Personnel/Costs

- Initial data collection and resolution (1 FTE – 5 months)
- Data Development schedule and GIS (2 FTE – 4 months)
- GIS System Development (2 FTE – 4 months)
- Hardware/Software Costs (\$78,000)
- On-Going/Future Costs (4 FTEs)





# CALM SharePoint GIS Homepage

A screenshot of the CALM SharePoint GIS Homepage. The page features a blue header with the CALM logo and the text "Los Angeles World Airports AIRPORTS DEVELOPMENT LIABILITY". Below the header, there is a search bar and a navigation menu. The main content area includes a "Welcome to LAWA ADG CALM SharePoint" message, a "View Information" section with links to "Interactive Maps and Data" and "Frequently Used Reports (PDF)", and a "Help" section with links to "View Users Guide" and "Email Administrator: calmshare@lawa.org". A red arrow points to the "View Map" button, which is located in the "Interactive Maps and Data" section. The "View Map" button is a green button with a white arrow pointing right and the text "View Map" above it.



# Maps by Location or Project

Recently Modified

- Home
- Interactive Maps
- ViewPrint\_Reports
- Other
- Delta

Lists

- Libraries
- ADG Drawing Management
- Construction Bulletins

Recycle Bin

All Site Content

### Maps by Location

- CTA
- Terminal 1
- Terminal 2
- Terminal 3
- Terminal 4
- Terminal 5
- Terminal 6
- Terminal 7
- Terminal 8
- TBIT

### Maps by Project

LAWA:

- CUP
- Elevators and Escalators

Concessions:

- Concessions T4,5,6,7,8
- TCH #1
- TCH #2

Airlines:

- Alaska
- Delta
- Other









# Terminal 6 – Ticketing Level

You are viewing: Terminal 6 - Level: Ticketing Date Filters: No filter applied

Table of Contents Legend Filter By Date

- All Projects in Planning Stages
- Planning Projects
- All Projects in Post-Planning Stages
- Alaska Projects
  - Elevators and Escalators
  - IT Rooms
  - CUP Utility Rooms
  - CUP Outside Terminals
  - Terminal-side Projects
- Concessions
  - Terminals 4,5,7,8
  - TCM #1
  - TCM #2
  - Grease Interceptors
  - Airline Construction Projects
    - Alaska
    - Delts
    - Others
- Other
  - Points of Interest
  - Space Descriptions
  - Ticketing Counters
  - Ground Transportation
  - Apron Logistics
  - Traffic Lane Closures

Operator	Name	IT Rooms	CUP Utility Rooms	Alaska	Construction Start Date	Construction End Date	Status	Terminal	Level	Square Feet	Cor
Alaska	Apron Renovation at Satellite Extension				10/01/2010	01/20/2012	In Construction	6	Ticketing	3,040	Her
Alaska	TR 6				04/15/2011	12/21/2011	In Construction	6	Ticketing	208	Her
Alaska	Ramp Support Space				06/21/2010	01/30/2012	In Construction	6	Ticketing	35,422	Her
Alaska	Elec. Room 2802				03/28/2011	10/25/2011	Completed	6	Ticketing	391	Her
Alaska	TR 4				12/03/2010	01/26/2012	In Construction	6	Ticketing	268	Her
Alaska	TR 3				10/25/2010	02/10/2012	In Construction	6	Ticketing	399	Her
Alaska	6ND				06/29/2009	05/29/2012	In Construction	6	Ticketing	15,711	Her

Record: << < | 0 | >> >> Records (0 out of 19 Selected) | Options...



# Tooltip Functionality

**You are viewing: Terminal 6 Level: Ticketing Date Filter: No filter applied**

**Table of Contents** | Legend | Filter By Date

- All Projects in Planning Stages
- Planning Projects
- All Projects in Post-Planning Stages
  - LAX Projects
    - Elevators and Escalators
    - IT Rooms
    - CUP Utility Rooms
    - CUP Outside Terminals
    - Terminal-wide Projects
  - Concessions
    - Terminals 4,5,7,8
    - TCM #1
    - TCM #2
  - Airline Construction Projects
    - Alaska
    - Delta
    - Others
  - Other
    - Points of Interest
    - Space Descriptions
    - Ticketing Counters
    - Ground Transportation
    - Airway Logistics
    - Traffic Lane Closures

70m  
300ft

**Airline Construction Information**

Operator: Alaska  
 Name: Ramp Support Space  
 Construction Start Date: 09/21/2010  
 Construction End Date: 01/26/2012  
 Status: In Construction  
 Terminal: 6  
 Level: Ticketing  
 Square Feet: 38,422  
 Contractor: Hensel Phelps  
 Contractor's Emergency Phone Number: 3101154200  
 ADG P/N: Matt Brown  
 BSN Name: Neil Nigaboyac  
 Inspector(s): Charles Haskley/Jeff Kamper (Night)  
 Inspector Phone Number: 3108770795/43-6646518  
 LAX Project Number: T-LAX-11012

Operator	Name	IT Rooms	CUP Utility Rooms	Alaska	Construction Start	Construction End	Level	Square Feet	Col
Alaska	Apron Renovation at Satellite Extension				10/01/2010				Her
Alaska	TR 6				04/15/2011				Her
Alaska	Ramp Support Space				09/21/2010	01/26/2012	In Construction	38,422	Her
Alaska	Elec. Room 2802				03/28/2011		Completed	291	Her
Alaska	TR 4				11/03/2010		In Construction	266	Her
Alaska	TR 3				10/25/2010		In Construction	299	Her
Alaska	BHS				06/29/2009		In Construction	18,711	Her

Record: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50  
 Records (0 out of 19 Selected) | Options...





# Select Table-Highlight Map

**You are viewing: Terminal 5 Level: Ticketing Date Filter: No filter applied**

**Table of Contents** | Legend | Filter By Date:

- All Projects in Planning Stages
- Planning Projects
- All Projects in Post-Planning Stages
  - Alaska Projects
    - Elevators and Escalators
    - IT Rooms
    - CUP Utility Rooms
    - CUP Outside Terminals
    - Terminal-wide Projects
  - Concessions
    - Terminals 4,5,7,8
    - TCM #1
    - TCM #2
  - Grease Interceptors
    - Alaska
    - Delta
    - Others
  - Other
    - Points of Interest
    - Space Descriptions
    - Ticketing Counters
    - Ground Transportation
    - Airline Lounges
    - Traffic Lane Obstacles

**Records:** << < > >> Records (1 out of 19 Selected) Options...

Operator	Name	Construction Start Date	Construction End Date	Status	Terminal	Level	Square Feet	Con
Alaska	Airport Renovation at Satellite Extension	10/01/2010	01/20/2012	In Construction	6	Ticketing	5,040	Her
Alaska	TR 6	04/13/2011	12/21/2011	In Construction	6	Ticketing	208	Her
Alaska	Ramp Support Space	09/21/2010	01/20/2012	In Construction	6	Ticketing	38,422	Her
Alaska	Elev. Room 2602	03/28/2011	10/25/2011	Completed	6	Ticketing	291	Her
Alaska	TR 4	12/03/2010	01/06/2012	In Construction	6	Ticketing	268	Her
Alaska	TR 3	10/25/2010	02/10/2012	In Construction	6	Ticketing	299	Her
Alaska	BHS	06/20/2009	09/28/2012	In Construction	6	Ticketing	18,711	Her







# Central Terminal Area – Gates Level

You are viewing: CTA Level: Gates Date Filter: No filter applied

Planning Elevators Escalators IT Rooms CUP Utility Rooms Public Concessions T4,S3,T8 Alaska Delta Others

Name	Location	Intersects Arrivals	Intersects Gates	Intersects Ticketing	Intersects Start D
Terminal 1-3	Between Terminal 1 and 2	*	*	*	05/01/2013
Terminal 2-3	Between Terminal 2 and 3	*	*	*	
T3-TEST Connector Bridge	Between Terminal 3 and T3BT	*	*	*	
T4-TEST Connector (Bridge/Buypass/Drive Bridge)	Between Terminal 4 and T3BT	*	*	*	05/29/2014
Loading Dock	Between Terminal 3 and T3BT	*	*	*	07/01/2013
North Terminal Complex - T3	Terminal 3	*	*	*	
North Terminal Complex - T2	Terminal 2	*	*	*	

Records: << >> | < > | >>> Records (0 out of 6 Selected) | Options... | Cancel

Table of Contents Legend Filter By Date

- All Projects in Planning Stages
- Planning Projects
- All Projects in Post Planning Stages
- LANA Projects
  - Elevators and Escalators
  - IT Rooms
  - CUP Utility Rooms
  - CUP Outside Terminal
  - Terminal-wide Projects
  - Concessions
  - Terminals 4,S,3,T8
  - TCM #1
  - TCM #2
  - Grease Interceptors
  - Airline Construction Projects
  - Alaska
  - Delta
  - Others
  - Other
    - Fields of Interest
    - Space Descriptions
    - Ticketing Counters
    - Ground Transportation
    - Apron Logistics
    - Traffic Lane Closures

Planning Elevators Escalators IT Rooms CUP Utility Rooms Public Concessions T4,S3,T8 Alaska Delta Others



# Filtering Functionality

You are viewing: Terminal 6 - Level: Gates. Date filter: Filtered by Start Date = 04/01/2012 and End Date = 04/01/2013

**Table of Contents** | **Legend** | **Filters**

**Filter by Location**

Start Date: 4/1/2012

End Date: 4/1/2013

**Filter by Construction Status**

Projects in Progress

Requests in Construction

Proposals Completed

Projects Proposed

Name	Fulcrum Name	Construction Start Date	Construction End Date	Alpha	Project Type	Terminal	Level	Type	Subtype	Target	Spacers Feet	Contract
Starbucks		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Food and Beverage	Coffee			
Nabholz Beach Brewing Company		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Food and Beverage	Casual Dining			
Sereno Commission		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Retail	Specialty Retail			
Hudson News		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Retail	Specialty Retail			
Newsy's Deli		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Food and Beverage	Specialty Retail			
Ruby's Diner		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Food and Beverage	Casual Dining			
Home Turf's Sports Bar		02/01/2012	12/01/2012	Proposed	TCH-2	6	Gates	Food and Beverage	Sports Bar			

Records: 6 of 6 | 1 of 9 | Records (7 out of 9) | [Details](#) | [Details](#)



# Space/Time Conflicts

You are viewing: Terminal 1 Levels: Ticketing Date Filter: No filter applied

Overlap of IT Room  
(MPOE) and Tenant  
Construction Projects

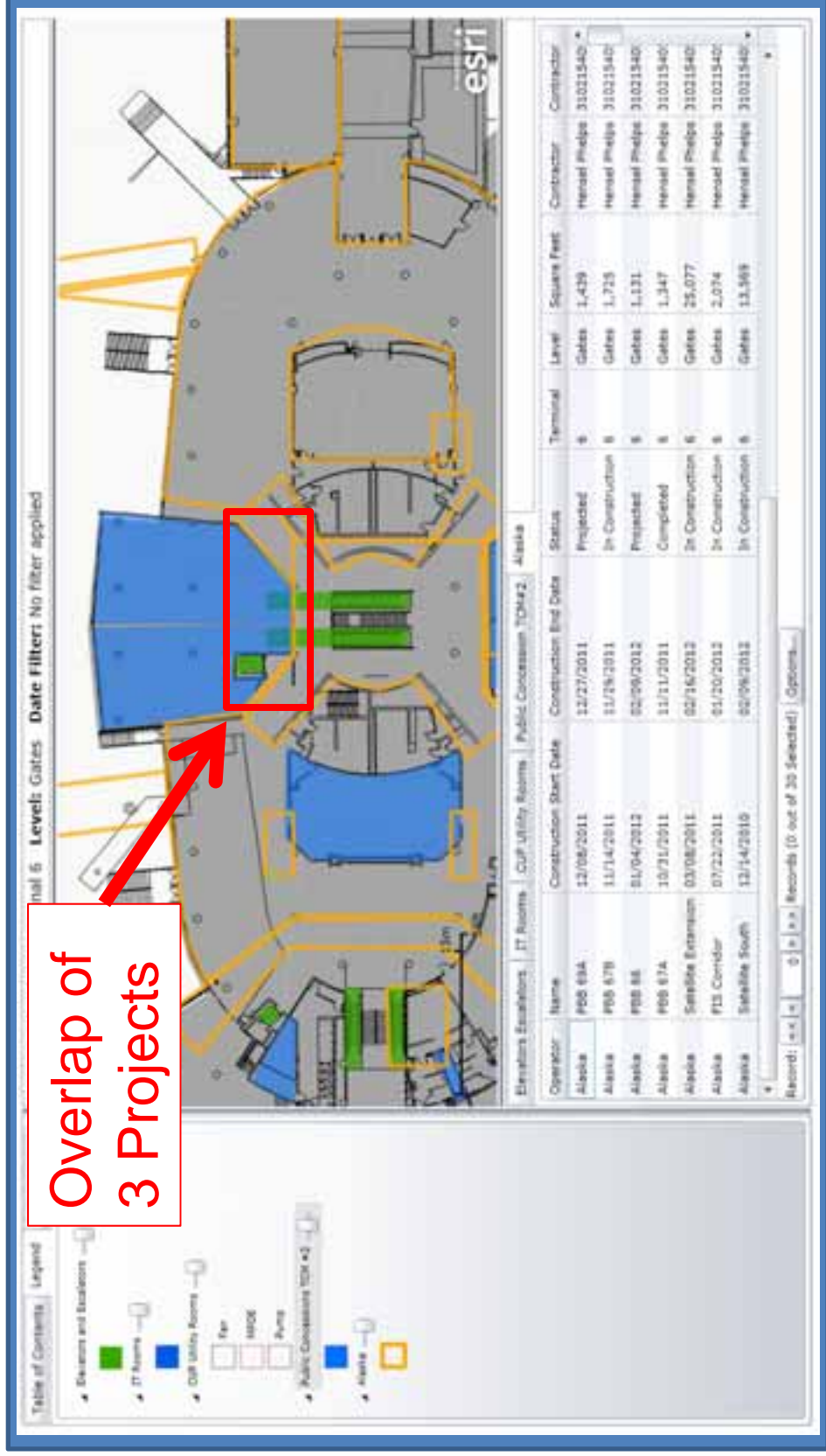
Operator	Name	Construction Start Date	Construction End Date	Status	Terminal	Level	Square Feet	Centre
Southwest	Air/Tran Relocation to Terminal 1			Projected	1	Ticketing	3,813	
Southwest	Air/Tran Relocation to Terminal 1			Projected	1	Ticketing	4,258	
Southwest	Southwest Airlines Operations Improvements	02/01/2012	08/31/2013	On hold	1	Ticketing	17,415	

Records: 1 of 1 | 0 of 3 Selected | Options...





# Space/Time Conflicts



Overlap of  
3 Projects



# “Out of the Box” vs. CALM System

**Multiple Data Sets/Tabs**

Records: 10 of 10 Selected | Options...

Operator	Applc	Applc Name	Construction Start Date	Construction End Date	Status	Tab
Alaska	Apron Removal at Satellite Extension	Apron Removal at Satellite Extension	10/01/2010	03/24/2012	In Construction	6
Alaska	TR 6	TR 6	04/13/2011	03/01/2012	In Construction	6
Alaska	Ramp Support Space	Ramp Support Space	09/21/2010	02/27/2012	In Construction	6
Alaska	TR 4	TR 4	12/03/2010	01/31/2012	In Construction	6
Alaska	TR 3	TR 3	10/25/2010	02/14/2012	In Construction	6
Alaska	BR5	BR5	06/29/2009	07/05/2012	In Construction	6
Alaska	ACP & Finales	ACP & Finales	07/06/2011	02/23/2012	In Construction	6





# Map Contents vs. Map Navigation

Group Layers according to Business Requirements

The screenshot shows a web-based map interface with two main panels:

- Map Contents:** Located on the left, it shows a list of layers including "2008 Incidents Heat Map" and "2008 Incidents", with "Streets" selected. A red arrow points from the text "Out of the Box" to the "Streets" layer.
- Table of Contents:** Located on the right, it displays a hierarchical list of map layers. A red arrow points from the text "CALM System" to the "Arrive Construction Projects" section, which includes sub-items like "Alaska", "Delta", and "Others".

**"Out of the Box"**

**CALM System**





# Mockup Tool – Balsamiq Program

The screenshot displays the Balsamiq Mockups software interface. On the left, there is a toolbar with various drawing tools and a list of elements to be placed on the canvas. The central canvas shows a detailed architectural floor plan of a terminal building. On the right side, there is a data table with columns for 'Name', 'Element', 'Category', 'Status', and 'Color'. A yellow callout box with red arrows points to a specific element in the table and the corresponding part of the floor plan.

Name	Element	Category	Status	Color
Boarder	10.1	10.1	Completed	Blue
Boarder	10.2	10.2	Completed	Blue
Boarder	10.3	10.3	Completed	Blue
Boarder	10.4	10.4	Completed	Blue
Boarder	10.5	10.5	Completed	Blue
Boarder	10.6	10.6	Completed	Blue
Boarder	10.7	10.7	Completed	Blue
Boarder	10.8	10.8	Completed	Blue
Boarder	10.9	10.9	Completed	Blue
Boarder	10.10	10.10	Completed	Blue

**Request:** when I use "CTRL+Click" a Checkable in the "Type of Content" the corresponding map layer and building.



## Development Language

- CALM chose Silverlight 4.0 – fit with SharePoint 2010
- Development done in MS Visual Studio 2010
- Project Management in Axosoft OnTime 11 Web edition





# Technical Success/Challenges

- Success:
  1. Out to Production in a few weeks vs. a few months
  2. System's content well-received
- Challenges:
  1. Maintaining data is cumbersome
  2. Silverlight is phasing out – v2.0 will be a complete overhaul
    - using HTML5 and ESRI's JavaScript API





# Management Success/Challenges

- Success:
  1. Mirrors the newly created Project Approval Process
  2. Executive management very supportive – high ROI
  3. Tool used for Terminal Coordination Meetings
- Challenges:
  1. Complexity of working with different divisions/groups
  2. Story-boarding early on vs. schedule pressure



## Benefits for LAWA

- Quickly bridge gap between existing and record drawings
- Resolve conflicts “on paper” rather than in the “field”
- Minimize passenger inconvenience
- More efficient packaging of work
- More information for project managers in terminals –  
know the “big picture” rather than individual projects



## Future Plans

- Future versions planned – standardize data
- Expand to Airside/Landside – entire LAX
- Expand to roof and basement Levels
- Expand team for data upkeep
- Framework for other initiatives – sold GIS to new users
- Opened the Door to Enterprise GIS at LAX





# Questions and Comments

- Contact Information:  
Donald Chinery  
GIS Project Manager  
Creelman and Associates, Inc.  
[dchinery@lawa.org](mailto:dchinery@lawa.org)